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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,617	12/17/2003	Kristy A. Campbell	M4065.0698/P698-A	4072

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EXAMINER

YEVSIKOV, VICTOR V

ART UNIT PAPER NUMBER

2829

DATE MAILED: 03/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/736,617

Applicant(s)

CAMPBELL ET AL.

Examiner

Victor V. Yevsikov

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 31-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/27/04;12/14/03</u> . | 6) <input type="checkbox"/> Other: ____.  |

## **DETAILED ACTION**

### ***Terminal Disclaimer***

The terminal disclaimer filed on 02/03/2005 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of Application No. 10/225,190 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 31-44 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. In claims 31 the newly amended phrase "approximately no metal chalcogenide agglomerations at the interface" presents new matter since it refers to the agglomeration of metal chalcogenide at the interface, which was not mentioned in the specification.

Claims 32-44 are dependent upon claim 31 and thus rejected as being indefinite based upon the dependency upon claim 31.

The term "approximately no metal chalcogenide agglomerations at the interface" in claim 31 is a relative term which renders the claim indefinite. The term

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"approximately" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention. The skilled artisan would not be reasonably apprised of how much metal may be present and still constitute "approximately no metal."

***Claim Rejections 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 31-34, 37 and 39 are rejected under 35 U.S.C. 102(a) as being anticipated by US Reissued Patent No. 37,259 E (Ovshinsky).

Ovshinsky discloses a memory device comprising a substrate (item 10) a first electrode (items 42+40) a resistance variable chalcogenide material (item 36) of at least 200 Angstroms in thickness (col. 16, lines 45-50) operatively adjacent to first electrode and a second electrode (item 14) that is operatively adjacent to the chalcogenide material. Ovshinsky further discloses that the chalcogenide material comprises Ge and Se as well as a metal ion dopant (col. 11, lines 35-67 & col. 12, lines 1-20). Finally Ovshinsky discloses that the chalcogenide material may comprise a gradient structure with alternating layers having different Ge contents such as Ge<sub>22</sub>Sb<sub>22</sub>Te<sub>56</sub> and Ge<sub>14</sub>Sb<sub>29</sub>Te<sub>57</sub>. (col. 13, lines 1-20).

***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

Claims 34, 36, 38 and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Reissued Patent No. 37,259 E (Ovshinsky).

As stated in paragraph 3, all the limitations of these claims have been met except for teaching that the thickness of the different regions is between 10 and 100 Angstroms and that the ion impurity content is homogeneous throughout.

Ovshinsky discloses that the chalcogenide material is deposited to a thickness as small as 200 Angstroms. (col. 16, lines 45-50).

It would have been obvious to one with ordinary skill in the specific art to form the regions of thicknesses between 10 and 100 Angstroms, since Ovshinsky discloses 200 Angstroms to be the total thickness of the chalcogen material and Ovshinsky also discloses the use of alternating layer to form a gradient structure thus each layer of the gradient structure would be less than 200 Angstroms and it has been held to be within the general skill of a worker in the art to discover optimum or workable ranges. In re Aller, 105 USPQ 233. Furthermore, such a modification would require a mere change in size and it has also been held that a change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237.

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Furthermore, while Ovshinsky does not specify that the ion doping is homogeneous through the chalcogenide, one with ordinary skill in the specific art would make the ion doping homogeneous, since it has been held that the provision of adjustability, where needed, involves only routine skill in the art. In re Stevens, 101 USPQ 284.

Claims 35 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Reissued Patent No. 37,259 E (Ovshinsky) in view of US Patent No. 5,761,115 (Kozicki et al.).

All the limitations of the claims have been met except for teaching that the second electrode and that the ion impurity comprise silver.

Kozicki et al. teach a memory device comprising a chalcogenide with ion impurity such as silver and wherein the anode is formed to comprise silver. (col. 3, lines 25-35 and col. 5, lines 20-31).

It would have been obvious to one with ordinary skill in the specific art to combine the teachings of Kozicki et al. to those of Ovshinsky, since Ovshinsky teaches that the ion impurity is of a transitional metal and since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice.. In re Leshin, 125 USPQ 416.

### ***Conclusion***

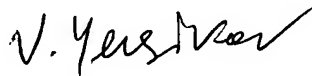
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Victor Yevsikov whose telephone number is (571) 272-1910. The examiner can normally be reached on Monday –Thursdays 8:00-5:30.

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If attempts to reach the examiner by telephone are unsuccessful, examiner's supervisor, William B. Baumeister, can be reached on (571) 272-1722. The fax phone numbers for the organization where this application or processing is assigned is (703) 873-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published application may be obtained from either Private PAIR or Public PAIR. Status information for unpublished application is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**B. WILLIAM BAUMEISTER**  
**SUPERVISORY PATENT EXAMINER**



Victor Yevsikov  
Examiner  
Art Unit 2829

March 3, 2005